

***Therapeutic Exercise For Spinal Segmental Stabilization in Low Back Pain: Scientific Basis and Clinical Approach***  
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This hard cover is forwarded by Manobar M. Panjabi, an acknowledged researcher on Lumbar Spine Biomechanics. In total, there are 191 pages, which are divided into five sections. These sections include: Introduction, The Scientific Basis, Applying Science to Practice, The Clinical Approach, and Future Directions; all addressing the issue of Spinal Segmental Stabilization. Each section is broken down into its own table of contents and the purpose of each chapter is defined.

Section one asks the questions: What muscles are most important for spinal segmental support? Are these muscles operating in a supporting role in back pain patients? Could dysfunctional muscles be retained to regain their supporting role? Could muscles be trained to compensate for impaired passive support?

Section two attempts to give evidence through scientific research, to answer the questions in section one. Panjabi presents the basic premise for the concept of spinal stabilization on the concept of the "Neutral Zone", as it relates to "Load Deformation Behaviour of the Spinal Segment". Anatomy and function of the muscles of the Lumbar Region and abdominal wall are described and through EMG investigation are cited as primary stabilizers of the Lumbar Spine and Pelvis. These muscles include the lumbar multifidus, longissimum thoracic and lumborum, iliocostalis lumborum, transversus abdominis, and the pelvic floor. Much of the relationship to segmental stabilization revolves around the authors research related to intra-abdominal pressure management. The relationship between co-contraction of the transverse abdominal, pelvic floor, multifidi, and diaphragm are discussed with upper and lower limb positioning. These findings are then related to low back pain and the treatment of low back pain with the firing patterns of these muscles considered (The effect of respiration on the stabilization muscles is also discussed for part of a chapter, as it relates to inter-abdominal pressure). To assess muscle firing patterns the authors attempt to use objective diagnostic tools such as surface EMG, diagnostic ultrasound, and a pressure algometer.

Section three describes various strategies to re-educate muscle in their stabilization function. The authors admit that their concepts and principles are not universally agreed upon. The more thoroughly researched concepts of joint stabilization are reviewed through the concept of co-contraction. The authors advocate motor skill rehabilitation through motor relearning, rather than through conventional exercise for increasing the strength and endurance of muscle.

Section four then deals with a "three-tiered" model of assessment depending on the degree of motor control deficit. This model moves from high-tech assessment to crude visual assessments dependant on the facilities resources. Chapter nine describes treatment strategies to address the inappropriate firing patterns that can develop in the low back pain patient. Some of the recommendations are purely anecdotal, others are occupation reintegration targeted.

Section five is like a breath of fresh air, giving the curious investigative clinician future direction and the impetuous to further investigate the concepts presented in this text. Key areas for suggested future research are identified by the authors.

The reference section includes 365 items. These items are both of foundational knowledge, which most of the more current items are based on, but also highlighting research by Bogduk, Cresswell, McGill, Panjabi, and Sheppard, which should be of great interest to the chiropractor. All of these researchers have contributed enormously to the knowledge base in neuromuscular biomechanics, in the past ten years.

In all, this text is well organized following a natural progression from theory to laboratory testing to practical application in the clinical setting. It is a reasonably priced text and I would recommend it for all chiropractors and athletic therapists.

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